Information on & Current Status of the Clear Lake Hitch (chi)

LAKE COUNTY BOARD OF SUPERVISORS

JANUARY 24, 2023 MEETING

ITEM 6.10



Today's Speakers In order of Presentation

- California Fish and Game Commission: Melissa Miller-Henson, Executive Director; Erika Zavaleta, Vice President
- California Dept. of Fish and Wildlife: Felipe La Luz, Senior Environmental Scientist
- Big Valley Band of Pomo Indians: Sarah Ryan, Environmental Director
- Robinson Rancheria: Luis Santana, Fisheries Biologist
- Chi Council for the Clear Lake Hitch: Peter Windrem, President
- Lake County Agriculture Advisory Committee: Sharron Zoller, Chair
- State Water Resources Control Board, Division of Water Rights: Erik Ekdahl, Deputy Director, Jessica Bean, Environmental Program Director
- Lake County Water Resources Department: Marina Deligiannis, Deputy Director

Q/A and Public Comment to take place after all of the presentations

California Fish & Game Commission

Erika Zavaleta, Vice President



California Department of Fish & Wildlife

Felipe La Luz, Senior Environmental Scientist





Clear Lake Hitch

- Lake County Board of Supervisors Meeting
 - January 24, 2023 Felipe La Luz California Department of Fish and Wildlife

Photo by: B.

Species Overview

 Clear Lake Hitch (Lavinia exilicauda chi)

- CESA Listed as threatened August 6, 2014
- Endemic to Clear Lake and its tributaries.
- Historically supported
 subsistence fishery
- Culturally important



Life History

Can reach length of 35 cm (SL)

- 6-year lifespan
 - Females mature in 2nd or 3rd year, males mature in 1st year
- Juveniles rear near shore and in tributaries
 - ► Fish rescues in Spring
- Adults occupying deeper water
- Feed on aquatic invertebrates during daylight hours

Spawning Requirements

Potamodromous

- February through May or June
- Spawn over shallow, clean gravel primarily in tributaries
- Some spawning occurs in the lake
 - ▶ (Kimsey 1960, Feyrer 2019)
 - Imited due to egg predation and desiccation



Photo by R. Macedo C

Population Trends

Historical accounts

and oral histories describe large spawning runs that crowded the tributaries.

Runs could consist of tens of thousands of Clear Lake Hitch and Clear Lake Splittail (Lindquist et al. 1943) State of California Natural Resources Agency Department of Fish and Wildlife

REPORT TO THE FISH AND GAME COMMISSION

A STATUS REVIEW OF CLEAR LAKE HITCH (Lavinia exilicauda chi)

May 2014



Clear Lake hitch adult. Photo courtesy of Rick Macedo

Charlton H. Bonham, Director California Department of Fish and Wildlife



Report to the Fish and Game Commission A STATUS REVIEW OF CLEAR LAKE HITCH

Chi Council Data (2005 – 2013)

Status Review

Number of spawning tributaries correlates with hydrology







Frequency Plot of USGS data
Juveniles are not recruiting to the population.

AI IFOI



Factors Affecting Decline

ss of Spawning and Rearing abitat

- Estimated 92% loss of historically available habitat due to physical barriers (CDFW 2014 Status Review)
- Habitat Quality
- Strandings and desiccation of adults, eggs, and juveniles
- Non-native species competition and predation.
- Water Quality/Contaminants?



Photo by B. Ewing, Adobe Creek 3/2/2014

Letter of Support to County

Sent to Director De Leon January 13th, 2023

- Evaluate strategies to increase and protect instream flow
 - Releases from Adobe and Highland Springs Reservoirs
 - 2002 Protest of Water Rights Application 31251 and Comments on the Mitigated Negative Declaration for the Adobe Creek Conjunctive Use Project
 - Reduction in ground water extraction and further examination of groundwater-surface water interconnectivity

Collaboration through Clear Lake Hitch Task Force, SWRCB Implementation Team and other venues

CDFW Consultation and Permitting

CDFW focuses on helping landowners avoid impacts to within fish, aquatic species, birds, native plants and waterbodies (rivers, streams, lakes, and ponds) by providing consultation and permits. CDFW reviews and authorizes projects that may alter the bed, bank or channel of any watercourse under the Lake and Streambed Alteration (LSA) program and provides recommendations to avoid "take" of special status species listed under the California Endangered Species Act (CESA).

**Many opportunities exist for expediting authorization of various projects and emergency work.

Email: <u>R2Info@wildlife.ca.gov</u> for more information

Do You Need a Permit?

Construction or maintenance of a road, bridge or crossing with any watercourse

- Installation or replacement of a culvert
- The use (diversion or drafting) of water from any watercourse
- Obstruction or changing the flow of water (dam/material placed in the watercourse)
- Disturbance or alteration to the bed, bank, or channel, of any watercourse/waterbody

Potentially impact a sensitive or CESA listed species (or their habitat) PLEASE REMEMBER: In-stream structures (permanent or temporary dams, ponds, weirs, culverts, etc.) must allow adequate flow below the structure to keep fish in good condition and allow fish passage in a fish bearing stream (Fish & Game Code Sections 5901 and 5937).

Conclusion

- apid population decline
- Qualitative comparison of oral accounts and Visual
 - Survey
- Quantitative assessment of recent USGS data
- Near complete juvenile recruitment failure in recent years
- CDFW is here to help with permitting and restoration
- No single entity has the power or authority to solve these issues



Felipe La LuzFelipe.laluz@wildlife.ca.gov

Photo By B. Ewing CDFW

Big Valley Band of Pomo Indians

Sarah Ryan, Environmental Director





No More Loss of Species on Our Watch





Jations | ervisors January 24, 2023 2014 Adobe Creek Fish Kill (Finley Rd Bridge crossing) Photo Credit: Ben Ewing, CDFW, March 2, 2014

State, local and tribal officials partner to rescue stranded Clear Lake hitch

ELIZABETH LARSON POSTED ON SATURDAY, 30 APRIL 2022 05:01 🥤 🎔 🕞 🖬 👰 30 APRIL 2022

= SanFran	cisco Chronicle <u>SUBSCRIBE</u> Sign In
At California's second biggest drought is gruesome	lake, the latest fallout of
May 6, 2022 Updated: May 6, 2022 8:47 p.m.	(f) () (B) (
NEWS TIPS	REVIEWS CONSERVATION TRAVEL PH

CALIFORNIA WATER SCIENCE CENTER SCIENCE

Studying Threatened Fish Species in Clear Lake, CA

SCIENCE PRODUCTS NEWS CONNECT ABOUT

By California Water Science Center December 8, 2022

The fight for an invisible fish

I became a plaintiff in a lawsuit for the Clear Lake hitch — a fish I've never seen. As the species quickly disappears, how much longer will it swim the waters of California?

HATCH

Relying on enforcement can be problematic

Review of FG code 1600 to prosecutions, 2009 to 2014

		L		0	11	l l	U	IX	L	111
Violation Da	te LEA	F&G Case #	Charges		Filed Y/N	Disposition	Location of water source			
8/26/09	F&G	AD1884401	FG1602(a)	Μ	Y	Dismissed 5/23/11	Herndon Creek, Lower Lake			
						REPLACE INTO MANNING CREEK NO				
						LESS THAN 10 YDS OF GRAVEL		5		
5/20/10	F&G	AD1884403	FG1602(a)	M	Civil	SIMILAR TO WHAT WAS TAKEN	Manning Creek		correction r	nade
11/15/09	F&G	AD1884410/11	FG1602(a)	M	Y	Dismissed 1/3/11	Kelsey Creek, Cobb	9	dismissed	
11/15/09	F&G	AD1884410/11	FG1602(a)	M	Y	Dismissed 1/3/11	Kelsey Creek, Cobb	13	rejected	
						Rejected 9/23/11 - amount of water taken		40		
7/25/11	F&G	AD1867524	FG1602(a)	M	N	not substantial		10	pending	
10/14/11	F&G	AD2058837/38	FG1602(a)	M	N	Rejected 3/9/12 - insufficient evidence		37	total cases	to DA 🕾
10/14/11	F&G	AD2058837/38	FG1602(a)	M	N	Rejected 3/9/12 - insufficient evidence				
						Dismissed 9/4/12 - pled no contest to	Lower Lake - diversion of			
4/1/12	F&G	AD2058804	FG1602(a)	M	Y	sewage dumping	State water			
5/3/12	F&G	AD2058805	FG1602(a)	M	pending	SK		2009-2014	percentage	e of wł
5/3/12	F&G	AD2058805	FG1602(a)	M	pending	SK		13.51		
5/3/12	F&G	AD2058805	FG1602(a)	M	pending	SK		24.32		
4/27/12	F&G	AD2062815	FG1602(a)	M	N	Rejected 8/20/12 - insufficient evidence		35.14		
8/16/12	F&G	AD2062826	FG1602(a)	M	pending	EB		27.03		
8/16/12	F&G	AD2062826	FG1602(a)	M	pending	EB				
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Chi spawning timing and water use

- Settler land use in the watershed has halved the spawning season for the chi. The majority of tributaries to the lake do not run during the time when the Clear Lake hitch fry need to be returning to the lake. The Clear Lake splittail, that ran after the chi, are now extinct.
- Limited data water use for irrigation and frost protection limits our understanding of how much water is needed and available for beneficial uses. Water management in the watershed has not prioritized data collection on surface water, groundwater, water use, and land use.
- I Bias towards minimization of trends indicating the over-allocation of water and groundwater depletion in the Big Valley Subbasin Groundwater Sustainability Plan development.





Graphic Source: FlowWest

Recommendations:

Surface water curtailments on all Clear Lake creeks for declared Dry Years during Chi spawning

season.

 Local precedent for no withdrawals during dry years: Yolo County does not receive their water rights allocation of Clear Lake water when the lake is below 3.22 ft Rumsey on May 1st. <u>Adobe Creek ID Hydraulic Modeling (2020) - Minimum Depth</u>

Basemap - ESRI 2020

Results





1D Stream flow modeling in Adobe creek

Since 2017, Big Valley Band of Pomo Indians has been doing a lot of work to understand the flow and depth requirements of the Clear Lake hitch.

- ID model is the first modeling effort to look at this, to improve identification of instream habitat and areas of potential stranding
- Modeling identified <u>34 cfs</u> as the threshold for which most of Adobe creek is passable throughout the spawning season.

Surface water diversions from local use reporting to SWRCB shows millions of gallons being used each year during the hitch spawning run.

As for groundwater usage, "CDFW expects that a meaningful portion of streamflow depletion is attributable to



		Point of Diversion		Uses – Irrigation		Uses - Domestic	Uses – Other				2013		
Right Status	Appleati on/ Acceptan ce	Status	Direct Lives on Amount (Cubic Feet Per	Dice: Vii/ Season Begin Date	Dillect Liv Season End Date	Season Begin Date	tion." ^{Use Type}	Direct Div Season Begin Date	Direct Div Season End Date	Use Populatio n/Acreag e	Maximum Annual Dra v (Gallons)	Total Annual Dra v (Gallons)	Purpose of Use
													Irrigation 15 Acres (Vineyard),
Claimed	1967	Active	1.2	March	August	None	N/A	N/A	N/A	N/A	N/A	6,794,002	Stockwatering, Domestic 5
Permitted	1984	Active	20 AFA	None	None	None	Frost Protection	March	May	20 Acres	6,517,028	6,517,028	Frost Protection 20 Acres
Claimed	2006	Active	25 AFA	None	None	None	Frost Protection	March	May	25 Acres	N/A	5,930,496	Frost Protection
Permitted	1988	Active	50 AFA	November	April	None	Frost Protection	November	April	38.5 Acres	16,292,571	8,797,988	Irrigation 38.5 Acres (Vineyard) Frost Protection 38.5 Acres (Vineyard)
Permitted	1984	Active	36.1AFA	None	None	None	Frost Protection	March	April	38.5 Acres	11,763,236	2,258,150	Frost Protection 38.5 Acres (Vineyard)
						Clear Lak	e Area Activitie	5					Irrigation 30 Acres (Vineyard), Frost Protection 30 Acres
Permitted	1988	Active	73 AFA	November	November	None	Frost Protection	November	April	75 Acres	47,574,308	7,181,765	(Vineyard)
Permitted	1988	Active	29 AFA	None	None	None	Frost Protection	March	April	34 Acres	9,449,691	531,137	Frost Protection 34 Acres (Vineyard)
												38.010.566	

Recommendations:

- Surface water curtailments on all Clear Lake creeks for declared Dry Years during Chi spawning season.
 - Precedent for no withdrawals during dry years: Yolo County does not receive their water rights when Clear Lake is below 3ft Rumsey on May 1st.
- Install live readings gage in Adobe creek
- **Support Tribe's modeling and data collection efforts**

Adobe Creek 2D Hydrodynamic Modeling (2022) Preliminary Results • Location showing 2022 chi stranding on Adobe Creek at Soda Bay Road

- The Big Valley Tribe is working to identify instream habitat areas and potential areas of limited passage
- The Tribe has installed 3 pressure transducers on Adobe Creek and 3 groundwater level sensors to help better understand the surface-groundwater



2D Stream flow modeling in Adobe creek

Preliminary modeling of Adobe creek indicates water depths become too shallow for the hitcl below a flow of 34 cubic feet per second.

- Multiple years of data show that Adobe creek has a higher discharge at the top of the watershed and much lower in the bottom – it's a "losing creek" which means the creek has less water in it the closer it is to the lake.
- Big Valley and Lake county are finalizing an MOU to install a pressure transducer below Highland Springs Reservoir to understand the water flow leaving the reservoir.

Adobe Creek near Soda Bay Road: Stream Transducer and

Groundwater Sensor Data



Date

While groundwater recharges, the creek water depth drops in January.

Recommendations:

- Surface water curtailments on all Clear Lake creeks for declared Dry Years during Chi spawning season.
 - Precedent for no withdrawals during dry years: Yolo County does not receive their water rights when Clear Lake is below 3ft Rumsey on May 1st.
- Install gage in Adobe creek, with live readings (USGS)
- **f** Support Tribe's modeling and data collection efforts
- Release water from Adobe creek and Highland springs reservoirs during Chi historic spawning run period.
- **Support aquifer recharge projects (FloodMAR)**

Recommendations:

- Surface water curtailments on all Clear Lake creeks for declared Dry Years during Chi spawning season.
 - Precedent for no withdrawals during dry years: Yolo County does not receive their water rights when Clear Lake is below 3ft Rumsey on May 1st.
- Install gage in Adobe creek, with live readings (USGS)
- **f** Support Tribe's modeling and data collection efforts
- Release water from Adobe creek and Highland springs reservoirs during Chi historic spawning run period.
- **f** Support aquifer recharge projects (FloodMAR)
- Groundwater pumping curtailments within 1 mile of Clear Lake creeks for declared Dry Years during Chi spawning season.

In Summary

The Chi can't wait for perfect data on this system to make decisions, however there's enough to move forward with improved water management.

- Agricultural water use data sharing is needed.
- There is not enough water for the Chi spawning adults and the fry which can take between 11-152 days (USGS, F. Freyer) to return to Clear Lake. The Tribe believes curtailments are necessary during dry years, and that better management of the water needs to happen now.
Robinson Rancheria

Luis Santana, Fisheries Biologist



Robinson Rancheria

Pomo Indians of California

Need to Enhance and Protect Available Habitat

LUIS SANTANA

HABITAT FISHERIES BIOLOGIST

ROBINSON RANCHERIA POMO INDIANS OF CALIFORNIA













Carp Impacts- Water Quality



- Increase in internal P loading through excretion and foraging/spawning behavior (bioturbation)
- Leads to decrease in secchi depth and an increase in Chl-a
- Amplified in shallow lakes

Carp Impacts-Vegetation

- Negative relationship between macrophyte abundance and carp biomass
- Elevated carp biomass (~398 lbs/acre) resulted in a loss of 71% of northern wild rice distribution on Clam Lake, Burnett County, WI in 2 years (Havranek, unpublished)

Wild Rice Experiment

Fence/Seed

- Carp are kept out by fence, seed was planted.
- Open/Seed
 - Seeded, Carp allowed to move in and out freely.

Fence

- No seed planted but carp kept out.
- Open
 - No seed or fence



Carp Impacts-

Fishery

- Reduction in habitat (plants) and food (macroinvertebrates) can result in reduced native fishes abundance, diversity, and size structure
- Weber & Brown (2011) found an inverse relationship between relative abundance (CPUE) of native fishes and common carp across 81 lakes in SD; specifically black crappie, bluegill, white bass, and northern pike.

Carp Impacts-Clear Lake Fishery

CPUE for Carp and Goldfish on Clear Lake not established.

- Above 89lbs/acre is ecologically damaging
- We chose to complete the abundance estimate using a boat electrofishing catch per unit effort (CPUE) model
- Tagging Carp and Goldfish
 - Goal: tag 30 specimens
 - Follow them seasonally to see where they congregate
 - Net them out pre-spawn when they seasonally congregate
 - Put in net pens
 - Manage the Carp and Goldfish fishery as long as it is needed

Density/hectare = 4.71 * Carp captured per hour + 3.04 Equation 1: Electrofishing catch per unit effort (CPUE) equation of estimating density of Carp within a basin.

Congregating Behaviors

- The have predictable foraging and spawning behaviors
- Eradication would take place in winter months where they typically congregate together



Figure 12: Carp distribution hotspots in Lake Sorell.

Concregating Rehaviors



Consura a artina a Dahan viara

Number of Tag Detections, Month

2.5 Miles

1.25

- 0, December
- 0, January
- 0, September
- 1, September
- 1, December
- 1, January
- O 2, December
- 2, January
- 2, September
- O 3, December
- 3, January
- 4, December
- 4, January
- 5, December



- Diggle, J., Patil, J., & Wisniewski, C. (2012). A manual for carp control: The Tasmanian model. *PestSmart Toolkit Publication, Invasive Animals Cooperative Research Centre*, 32.
- A review of the impacts, effects of common carp on freshwater lake ... (n.d.). Retrieved May 23, 2022, from <u>http://www.kci.com/wp-</u> <u>content/uploads/2016/10/Carp-Impacts-Effects.pdf</u>
- W. (2016). WSB/Chippewa Indians of St. Croix. 2016. Common Carp Research/Mitigation and Wild Rice Restoration. WSB. Minneapolis, Minnesota: WSB.
- Zambrano, L., Scheffer, M., & Martínez-Ramos, M. (2001). Catastrophic response of lakes to benthivorous fish introduction. *Oikos, 94*(2), 344-350. doi:10.1034/j.1600-0706.2001.940215.x

Chi Council for the Clear Lake Hitch

Peter Windrem, President



Clear Lake Hitch Spawning & Groundwater Pumping in Big Valley

PRESENTED BY PETER WINDREM BVGSPAC – GED SUBCOMMITTEE SEPTEMBER 2, 2021



Key Hitch Facts

- Females grow up to 13" long; males are 8" 10"
- Spawn in the tributaries to Clear Lake and in Clear Lake
- Female eggs number to 60,000 with as many as 122,000 in one female
- Eggs are deposited in clean gravel, then expand and settle among rocks
- In 5-10 days the embryos hatch and 5-10 days after the hatch the embryos begin to swim freely to the lake
- Historic numbers were vast; significant decline in population to the present

Conditions affecting survival of Clear Lake Hitch

In Clear Lake

- Introduced non-native fish species
 - Silver sides and threadfin shad compete for food
 - Largemouth bass predation and disruption of spawning runs
- Loss of wetlands for juvenile hitch rearing
- In Kelsey Creek
 - Physical barriers to spawning grounds
 - Detention Structure and footings at Main Street Bridge
 - Degradation of spawning beds
 - Fewer fish entering the stream

The Question

Does groundwater pumping for frost protection in Big Valley reduce stream flow in Kelsey Creek during the hitch spawning runs? Distance from Main Street Bridge to KCK = 1.5 miles

Distance from USGS gauge to Main Street Bridge = 4.0 miles



Sources and Demands on Kelsey Creek

- Sources
 - Winter rainfall runoff from surrounding mountains
 - Summertime water from springs on Boggs & Cobb Mountain
- Demands
 - Cobb Valley residential and recreational uses
 - Kelseyville Water District for town & areas around
 - Vineyards, pears, walnuts & cannabis

Frost Protection Basics

			FRO	ST	IRRIGATE						
JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC

- Essential for the production of pears & winegrapes in Big Valley
- Water is applied to crops at night & early morning when temperature likely to fall below 32 degrees
- Water applied from 4 to 10 hours in a night depending on temperature
- Number of nights in a season typically range from 0 to 12 with average of 6
- Groundwater is the principal source of water with some near stream pumping

Comparison of USGS & KCK Streamflow Gauges

The following slides for years 2011, 2018, 2019 & 2020 show for Kelsey Creek the dates hitch ran each year, the dates frost protection pumping occurred and compares the two streamflow gauges to ascertain whether streamflow was affected by pumping for frost protection.

Kelsey Creek USGS & KCK Gauge Heights – Spring 2011





(4 nights)

Spring 2017 Kelsey Creek USGS & KCK Gauge Heights



---- Frost protection; occurred after hitch run

USGS

КСК

-- 4/30 (1

Kelsey Creek USGS & KCK Gauge Heights – Spring 2020



Frost protection as % of spawning season

Spawning season: February 15 to May 15 = 90 days = 2,160 hours

Frost protection events occur, on average, 6 nights per season and groundwater is pumped onto vines for 6 hours per night for 36 hours of frost protection pumping per season In addition, pumping occurs after each frost event for an additional 6 hours to refill a reservoir for a total of 36 hours per season.

Pumping to fill the reservoir plus pumping to spray water onto the vines equals 72 hours of frost protection pumping per season.

Dividing the hours spent pumping for frost protection (72) by the hours in the spawning season (2,1600) shows that pumping for frost protection takes up less than 5% of the spawning season time, an insufficient time to have any appreciable effect on streamflow.

Conclusions

- For the years 2011, 2018 & 2019, groundwater pumping occurred after the hitch runs completed. For the year 2020, hitch spawning run and groundwater pumping overlapped.
- Groundwater pumping occurred during less that 5% of the hitch spawning season.
- Groundwater pumping for frost protection in Big Valley does not reduce stream flow in Kelsey Creek during the hitch spawning runs



Pretext to seize control of agricultural pumping

Ag excluded from participating in discussions

Ag is wrongfully charged as responsible for hitch demise

No opportunity to defend; this is the first public forum with opportunity to respond

No participation

Adobe Creek

Since 2004, Adobe Creek has never failed to have a hitch spawning run, unlike all other tributaries to Clear Lake. Every year, Chi Council monitors have observed hitch in Adobe Creek and the numbers have been substantial.

What differentiates Adobe Creek from other streams? It's the two reservoirs upstream: Highland Springs and Adobe Creek. No other streams have reservoirs.

How the reservoirs affect Adobe Creek to make it consistently attractive to hitch is not yet known.
Lake County Agriculture Advisory Committee

Sharron Zoller, Chair



Kelseyville Rainfall 1935-2023, Red Lines

vs Hitch Counts/100, Blue Lines



Pelicans-Mouth of Kelsey Creek 10-20-2013



Blue Ribbon Commission for the Rehabilitation of Clear Lake

Erik Sklar, Chair



State Water Resources Control Board, Division of Water Rights

Erik Ekdahl, Deputy Director & Jessica Bean, Environmental Program Director



Clear Lake Hitch Emergency

LIFORNIA

Water Boards

Jessica Bean Environmental Program Manager Division of Water Rights State Water Resources Control Board

Lake County Board of Supervisors | January 24, 2023

California Water Boards

- One State and Nine Regional Boards
- Protect Water Quality
- Regulate Drinking Water
- Administer Water Rights
- Provide Financial Assistance



California Water Boards in Lake County

- Total Maximum Daily Loads (TMDLs)
- Irrigated Lands Program & Waste Discharge Requirements (WDRs)
- Blue Ribbon Panel
- Water Rights
- Managing Flows
- Protecting the hitch- we need your help!











Data Needs & Other Questions

- Diversion volumes, timing, rates
- Groundwater/surface water interactions (how to ID & measure)
- Well locations, logs, depths (screens), size/pumping rates, pumping tests
- Groundwater quality (suitable for pump back projects?)
 - Can anyone volunteer well water quality data?
- Flow (gages), temperatures (timing of frost protection actions)
- Historical records or logs of fish kills and fish rescues
- Frost protection dates
- Other?

Protecting the Hitch Now and in the Long Term

- Data to better understand the problem & potential solutions
- Enforcement to ensure all diversions are legal
- · Voluntary actions to keep water in the creeks this year
- Collaboration to find effective solutions and spread messages
- Regulations if voluntary actions aren't successful?

Enforcement to ensure all diversions are legal

- Illegal diversions
- Illegal cannabis
- Illegal reservoirs and water storage
- Reporting violations
- Coordinating with Department of Fish & Wildlife

Voluntary actions to keep water in the creeks this year

- Reduce diversions/pumping
- Coordinate diversion/pump timing
- Alternative frost protection methods
- Pump backs (using groundwater for streamflow)
- Other ideas?

Help Coordinate & Collaborate

- Share messages
- Coordinate local solutions
- Share data with neighbors, and others
- Collect and share data this year
- Identify who needs the most help (small farms, limited management capacity, little to no room for ponds, etc.)
- Interest in off stream storage ponds for long-term

Is there Need for Regulatory Actions?

- How do we get good, timely information on water use?
 - Size of diversions?
 - Groundwater use?
- Reporting violations
- Coordinating with Department of Fish & Wildlife streambed alterations, structures, or other unpermitted barriers
- Long-term frost protection?



Early in effort many questions & uncertainties

Drivers climate, hydrology, water use

Solutions coordination & costs

Can't let uncertainty lead to extinction!

What We've Done So Far

- Clear Lake Emergency Summit (early-Dec)
- Data Collection & Analysis
- Tribal Engagement
 - Attending meetings, sharing data & ongoing collaboration
- State, Federal & Local Coordination
 - Task Force & Implementation Team
 - California Departments of Fish and Wildlife, Water Resources, and Food and Agriculture
 - Lake County
 - University of California Davis
 - United States Geological Survey, United States Fish & Wildlife Service

Community Engagement

- Lake County Farm Bureau
- Wine Institute
- California Association of Wine Grape Growers
- Public Listening Sessions
- Site Visits

What We Need From You

- Commit to specific voluntary actions
 - Reduce diversions/pumping from February-May
 - Use alternative frost protection methods
 - Coordinate diversion/pump timing
 - Other?
- Become a local coordinator to keep up momentum
- Share data with us & help answer our questions
- Help connect with hard-to-reach folks
- Invite us to other meetings

Engagement Opportunities

State Water Board Listening Session- Thursday, January 19, 2023 1:00 p.m. to 3:00 p.m. PST Remote Participation Online via Zoom: bit.ly/CLH_Jan19

Lake County Board of Supervisors Meeting-Tuesday, January 24, 2023 Meting time: 9:00 a.m. PST Item time: Afternoon In-Person & Online: countyoflake.legistar.com/Calendar.aspx

State Water Board Listening Session- Wednesday, February 1, 2023 6:00 p.m. to 8:00 p.m. PST Remote Participation Online via Zoom: bit.ly/CLH_Feb1

Thank You!

Website: waterboards.ca.gov/clearlakehitch Email Updates: Sign up on our website (at the bottom) Questions: email clearlakehitch@waterboards.ca.gov

Lake County Water Resources Department

Marina Deligiannis, Deputy Director



Role of Lake County Water Resources

Lake County Water Resources Department is tasked with the protection and preservation, health and growth of Clear Lake

To promote both an environmentally and economically sustainable watershed, the Water Resources Department is tasked with:

- Aquatic Plant Management
- Aids to Navigation
- Groundwater Monitoring
- Flood Management
- Lakebed Management
- Highland Springs Recreation Area
- Stormwater Management
- Surface Water Quality Monitoring
- Environmental Education/Outreach
- Middle Creek Flood Damage Reduction & Ecosystem Restoration Project

Highland Springs and Adobe Reservoir

Highland Creek Reservoir

- At Primary Spillway: 1,090 acrefeet storage, 72 acre surface area
- At Secondary Spillway: 3,500 acrefeet storage, 146 acre surface area
- The Primary Spillway limits outflow to Highland Creek to 560 cfs.
- Normal operation of the reservoir is "hands off" with flows being regulated by the design of the Primary Spillway. Summer operation requires periodic adjustment of the drain valve to maintain the summer release, as the valve is subject to blockage with debris at the bottom of the reservoir.

Adobe Creek Reservoir

- At Primary Spillway: 90 acre-feet storage, 24 acre surface area
- At Secondary Spillway: 695 acrefeet storage, 64 acre surface area
- The Primary Spillway limits outflow to Adobe Creek to 940 cubic feet per second (cfs).
- No water is released downstream during the summer months. 2 agricultural interests pump water from the reservoir for irrigation of walnuts and grapes. Normal operation of the reservoir is "hands off" with flows being regulated by the design of the Primary Spillway.



Flood Control & Stream Restoration

- The levees in the Upper Basin are maintained by the Lake County Watershed Protection District. O&M activities include:
 - Levee patrolling, especially during and after high water events
 - Emergency flood fights as needed
 - Mowing of grasses
 - Control of weeds with herbicides
 - Removal of excess woody growth (trees and bushes) within the levee easements
 - Maintenance of levee roads
 - Removal and trimming of trees and brush within the creek's active channel area
 - Periodic removal of sediment deposits



Barriers

- Lack of funding / revenue for stream restoration
- Strict permitting requirements and costs per CDFW Lake and Streambed Alteration Program

Middle Creek Flood Control Project

Middle Creek Flood Damage Reduction and Ecosystem Restoration Project

The Middle Creek Flood Damage and Ecosystem Restoration Project will reconnect Scotts and Middle Creek to the historic wetland and floodplain areas by acquiring the reclaimed land and breaching the existing levee system to direct flows into the historically flooded area.





The **Scotts Creek** and **Middle Creek** watersheds make up 50% of the ····> Clear Lake watershed

These two watersheds provide 57% of the inflow and 71% of the **phosphorus** loading into Clear Lake

Lakebed Management

COUNTY OF LAKE WATER RESOURCES DEPARTMENT 255 N. Forbes Street Lakeport, California 95453 Telephone (707) 263-2344

Scott De Leon Water Resources Director

LAKEBED PERMITTING STEP-BY-STEP

WHY DO I NEED A PERMIT?

The Chapter 23 Shoreline Ordinance regulates the construction, alteration. and maintenance of structures along Clear Lake's shoreline, lakeward of the high water mark (7.79 ft. Rumsey).

WHEN DO I NEED A PERMIT?

You need a lakebed permit if you are constructing a structure such as a dock or seawall along the shoreline or below the surface of the lake, or if you are filling or dredging lakeward of the high water mark.



The permitting process involves three County departments: Water Resources, Planning, and Building.

Fees support the County's ability to manage Clear Lake for recreation. fishing, ecological preservation, and other uses.

HOW CAN I GET A PERMIT?

PERMIT APPLICATION

HABITAT EVALUATION

the proposed project site.

Submit your application for a lakebad encroschment permit and pay the fee through the Water Resources Department. Visit the County of Lake website for a full schedule of fees.

The Water Resources Department will complete a habitat evaluation of



5

6

1

3 ZONING CLEARANCE

Apply for a zoning clearance and submit the zoning clearance fee through the Planning Department. Fees vary based on the proposed project.

CEQA REVIEW

The Planning Department will complete CEQA review for your proposed project. A CEQA fee is required. Note that CEQA fees increase significantly if your project affects the Clear Lake Hitch or tules.

BUILDING PERMIT

Apply for a building permit through the Building Department, Pay a portion of the fee upfront, then pay the balance upon receipt of the permit. Note that fees vary based on the proposed project.

OTHER PERMITS

Some projects require additional permits and/or fees from regional, state, or federal agencies. Contact the Water Resources Department to determine if your project requires additional permits and/or fees.

QUESTIONS? Planning Lotophisterical Advantagion, (PDTL2013-222)

CONTACT US!



Fax (707) 263-1965

Lakebed Encroachment Permit- Supplemental Environmental Questionnaire

Background.

The completed Supplemental Environmental Questionnaire is required during the submission of a Lakebed Encroachment Permit. The Questionnaire is used for all projects that will result in disturbance to the lakebed, including but not limited to alterations that are within the nearshore or foreshore.

Definitions.

*Fish Spawning Areas / Fish Aquatic Habitats	Areas which have been, prior to the issuance of the administrative encroachment permit, designated as such by the County of Lake or by State or Federal fish and game authorities, or such other areas determined by Lakebed Management to contain fish spawning areas or fish and aquatic habitats of sufficient magnitude, environmental importance, or uniqueness to warrant denial of an application for construction, alteration, or use.
*Foreshore	Zone lying between the low water mark (0.00 feet Rumsey) and the high water mark (7.79 feet Rumsey). This zone is also the area of the Public Trust Easement that is defined in "Lyon v. State of California, 29 Cal. 3d 210."
*Nearshore	Zone extending lakeward from the low water mark.
Project Area	Area where construction activities will occur, including; areas required for equipment access, and 25 foot area around the proposed structure or repair identified in the Lakebed Encroachment Permit.
*Shoreline	Line established by Clear Lake when its level is at zero (0.00) feet on the Rumsey Gauge.
*Shorezone	Area composed of the nearshore, foreshore, and backshore.
*Wetlands	Areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, bogs, marshes, and similar areas

*indicates definitions identified in Ch.23-3 of County Code of Ordinances

Instructions.

Complete all sections below. Where indicated, provide additional information in the box. If additional sheets are required, attach to this questionnaire. Please reference the section and section number on the additional sheet(s). If a section number is not applicable to the project, check "N/A".

Groundwater Conditions in Big Valley GDE's (groundwater dependent ecosystems

Big Valley Groundwater Sustainability Plan: <u>https://s</u>gma.water.ca.gov/portal/gsp/preview/127



Figure 2-59. The GDEs Along Kelsey Creek: Upstream Section in the Proximity of Main Street Bridge (left), and Downstream Section in the Proximity of the Groundwater Recharge Structure



Figure 2-58. Big Valley Identified Groundwater Dependent Ecosystems Based on the NCCAG Dataset (Comparison of 2009-2018 Health Conditions)



Figure 2-62. Depth to Groundwater at Wells in the Proximity of Big Valley GDEs

Located on page 2-104 of Big Valley GSP

Filling Data Gaps in Big Valley

- Support provided by California Department of Water Resources (DWR) Technical Support Services (TSS)
- Coordinated Monitoring Well locations with Big Valley GSPAC
- DWR setting prioritizing 2 of 7 wells in Big Valley GSA TSS Application, located on Adobe and Kelsey Creek
- Outcome will be stronger understanding of surface water / groundwater interaction







LCWRD Hitch-Related Funding Requests and Activities

- LCWRD committed to continue prioritization of protection of Clear Lake Hitch Habitat and conservation efforts including collaboration on such with local, State and Federal agencies
- Since 2015, District has applied to over \$10 million for Hitch habitat conservation and monitoring through the State and Federal agencies and has been unsuccessful.





Additional Comments from USFW & USGS

Fred Feyre, Research Fish Biologist, USGS Michael Fris, Field Supervisor, USFW Amber Aguilera, Biologist, USFW




Participating Entities Websites

HTTPS://WWW.LAKECOUNTYCA.GOV/1450/CLEAR-LAKE-HITCH-CHI HTTPS://WATERBOARDS.CA.GOV/CLEARLAKEHITCH/ HTTPS://WWW.BVRANCHERIA.COM/EPA HTTPS://RRCBC-NSN.GOV/TRIBAL-DEPARTMENTS/ENVIORNMENTAL-DEPARTMENT/ HTTPS://WWW.USGS.GOV/ HTTPS://WILDLIFE.CA.GOV/ HTTPS://FGC.CA.GOV/ HTTPS://WWW.FWS.GOV/